



US Army Corps
of Engineers

Upper Mississippi River - Illinois Waterway System Navigation Study

UMR-IWW System Navigation Study Newsletter

March 2003

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Stakeholders Develop Ecosystem Objectives

500 site-specific needs added through workshop series

Large floodplain wetlands every 20 miles. Water clear enough to support vegetation to a depth of 1.5 meters. A 15 percent reduction in phosphorus coming from tributaries.

Those objectives for the Upper Mississippi River and Illinois Waterway System are just a few examples of the many reviewed and developed through a series of four regional workshops held in the study area in November.

Some 30-40 people per meeting, or 140 in all, came together for two-day work sessions to develop a comprehensive database of environmental objectives for the river system. The meetings were an early but key step in helping to reach the environmental sustainability vision of the restructured Navigation Study. While the study initially focused on navigation and related impacts, it now also seeks to achieve a sustainable river ecosystem and address river management needs related to naviga-

tion. The participants accomplished their ambitious assignment, setting many site-specific objectives and helping to further define objectives developed through previous research and study efforts. The results of the workshops, broken down by region, can be found in the graph on page 2.

Workshop participants included natural resource managers, scientists and landowners, and they came from diverse federal, state, and private organizations including the U.S. Fish and Wildlife Service, the five state departments of

natural resources, the navigation industry, and several private environmental groups. What all shared was a working knowledge of specific stretches of the river system, said Hank DeHaan, assistant study manager.

The workshops were particularly valuable because of the variety of input given on habitat needs, according to Bob Clevestine,

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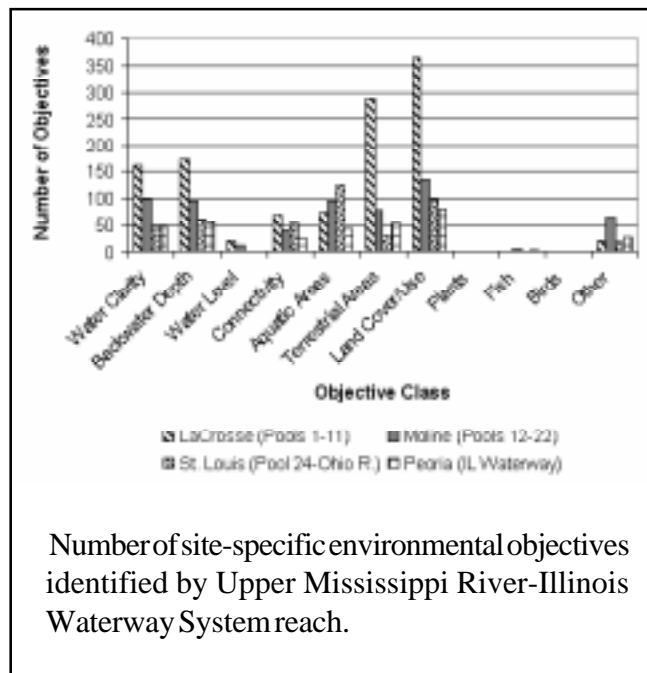
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a U.S. Fish and Wildlife Service biologist who co-chaired the Upper Mississippi River System Environ-



mental Management Program Habitat Needs Assessment and participated in stakeholder workshops. “We heard from people we hadn’t quite gotten to before,” he said. “For example, we talked to state Natural Heritage Program folks, who are focused on non-game endangered species and biodiversity issues. That was a welcome addition to the mix.” He’d like to hear more from floodplain landowners, he said, and further outreach efforts will be made to get them invested in the process.

While no one objective stood out above the others, what did emerge was a clear sense that it’s time for action, Clevenstine said. “It’s kind of like arguing about how hot the fire is while the house is burning down. Everybody finally agrees that ‘yeah, it’s time to turn the hose on.’ There was more of a collective sense of purpose in restoration than I’ve seen.”

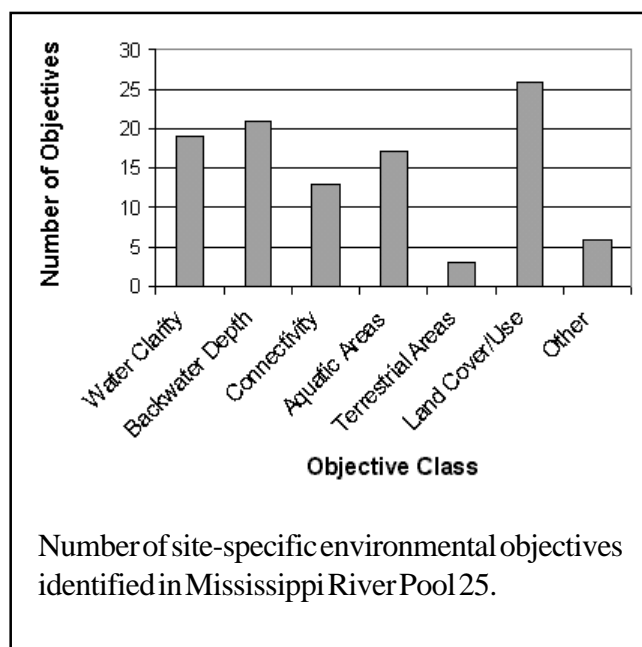
Mapping Out a Plan

Participants were given worksheets and maps to fill in, using those tools to pinpoint areas of need and help refine existing objectives. For example, participants were asked not to just state a need for deeper backwaters on a particular point of the river, DeHaan said, but

to add, “to what depth?” or “during what time of the year?” They then reviewed river management actions and the “restoration toolbox” available to accomplish the various objectives.

“What we’re trying to do is develop a comprehensive database we can draw on to help establish overall river management alternatives for the system,” DeHaan said.

The database now is being reviewed by a panel of experts in the fields of terrestrial and aquatic ecology, ecological modeling, hydrology and sediment, geomorphology and water quality (listed on page 4). The experts are meeting monthly to evaluate the objectives and assist the study team in developing environmental alternative plans—the multiple combinations of management actions that seek to address and balance the local, river reach and system-wide needs of the river ecosystem. Study team members also will estimate the potential costs and benefits of various plans. The selected environmental objectives will then be integrated with objectives for the navigation system, and tradeoff analyses will identify and evaluate the environmental, economic and social benefits of an integrated plan. Throughout the process, the work of the expert panel will be shared with workshop participants and other stakeholders for review and comment, and the combination of analyses and input will be used to develop the recommended plan presented in the Final Feasibility Report. That report is scheduled to be submitted to Congress in late 2004.



One size doesn't fit all

One of the most surprising outcomes of the meetings was the difference between needs on various reaches of the river or different pools, underscoring the need for both systemwide goals and site-specific objectives. "While there is a systemwide goal for improving the natural connectivity between the river and its floodplain," DeHaan said, "site-specific objectives differed in the way to accomplish this. This was because many floodplain areas of the lower reaches were found to be overly disconnected from the river due to levees while much of the floodplain in the upper reaches was overly connected because of inundation caused by the navigation dams."












Meetings were held in Peoria, Illinois; La Crosse, Wisconsin; Moline, Illinois; and St. Louis, Missouri. In each, participants were assigned a reach of the river to review. The Peoria group identified 227 new objectives, for example, with 80 percent of those concentrated in the Illinois Waterway's lower three pools. At that meeting, land cover/use and backwater depth were the most common problems identified, but much of the discussion focused on emerging problems like the need to iso-

late exotic and invasive fish species. In La Crosse, many of the objectives focused on problems in urban areas along the river stretch, like the need to improve the quality of urban storm water runoff and have an early warning system for contaminant spills.

But the pool-by-pool look at river needs is one of the more exciting outcomes of the process, participants said. As just one example, Pool 25 on the lower reach of the Upper Mississippi River system had an above average density of objectives. For the area between Lock and Dam 25 near Winfield, Missouri, upstream to Lock and Dam 24 near Clarksville, Missouri, participants identified at least three objectives per mile of river as displayed on the map on this page.

This pool faces many challenges typical of southern reaches. Floodplain areas are disconnected from the river, backwaters are filling in with sediment, and there's a need for fish overwintering habitat and more aquatic vegetation. In addition, much of the floodplain forest has been lost to farmland and other development. As shown on the Pool 25 graph on page 2, the groups listed improved habitat diversity as their top objective for this stretch; backwater depth and water clarity were also major concerns. ♦

Environmental Objectives

	Water Clarity
	Backwater Depth
	Water Level
	Connectivity
	Aquatic Areas
	Terrestrial Areas
	Land Cover/Use
	Plants
	Fish
	Birds
	Other

Pool 25

2 0 2 4 Miles



EXPERT PANEL FORMED

A distinguished group of experts in their respective fields will review workshop objectives and management actions and help the study team form alternative plans to achieve environmental sustainability. The panel will meet through April 2003 to discuss goals and objectives, develop management strategies and alternatives, link goals and objectives with management strategies and synthesize the efforts for inclusion into the Feasibility Report. Panelists include:

Coordinators: John Barko (U.S. Engineer Research and Development Center Environmental Laboratory); Ken Lubinski (U.S. Geological Survey) and Kenneth Barr (Corps of Engineers)

Geomorphology: Robb Jacobson (U.S. Geological Survey); Robert Davinroy (Corps of Engineers); Jon Hendrickson (Corps of Engineers)

Aquatic ecology: Mark Bain (Cornell University); Gordon Farabee (Contractor); Chuck Theiling (Corps of Engineers); Dan Wilcox (Corps of Engineers)

Terrestrial Ecology: Carl Korschgen (U.S. Geological Survey); Bob Clevenstine (U.S. Fish and Wildlife Service)

Hydrology and Sediment: Tatsuaki Nakato (University of Iowa); Kevin Landwehr (Corps of Engineers)

Water Quality: Dave Soballe (U.S. Geological Survey) and Clint Beckert (Corps of Engineers)

Ecological Modeling: John Nestler (U.S. Engineer Research and Development Center Environmental Laboratory); L. Jean O'Neil (U.S. Engineer Research and Development Center Environmental Laboratory); Steve Bartell (Cadmus Group)

Operation and Maintenance Update: *Managing the Water Level*

A work group has been formed to evaluate opportunities for regulating water levels on the river system. The results of the work group investigation will be used to identify water level management actions that could support new environmental sustainability objectives.

Water level management initiatives are not new to the Upper Mississippi River and Illinois Waterway. There are ongoing initiatives in all three Corps Districts on the Upper Mississippi River system. An example is pool drawdowns to promote aquatic vegetation—a process that's been used in Pools 8, 13, 24, 25, and 26. Drawdowns seek to simulate low summer water levels that occurred prior to construction of locks and dams and promote growth of aquatic plants like bulrush and arrowhead. Those plants in turn provide food, shelter and dissolved oxygen to fish and wildlife.

The work group is being led by Kevin Landwehr, a hydraulic engineer in the Rock Island District, and consists of representatives of the Rock Island, St. Louis, and St. Paul districts, as well as the U.S. Fish & Wildlife Service and The Nature Conservancy. "This effort will seek to maximize use of existing data developed for the past Water Level Management initiatives, and it will also seek to leverage the knowledge and expertise of the personnel and agencies involved in those efforts," Landwehr says. A draft report is expected in July 2003.

Web Site Becoming Study Portal

People from around the globe are checking on the Navigation Study progress via its web site, often downloading meeting minutes, the Navigation Study newsletter and the study's Interim Report.

A recent analysis shows that more than 12,000 people have visited the site since April 2002, and while most accessed the site once and found what they were looking for, 4 percent (286 people) have returned 10 or more times.

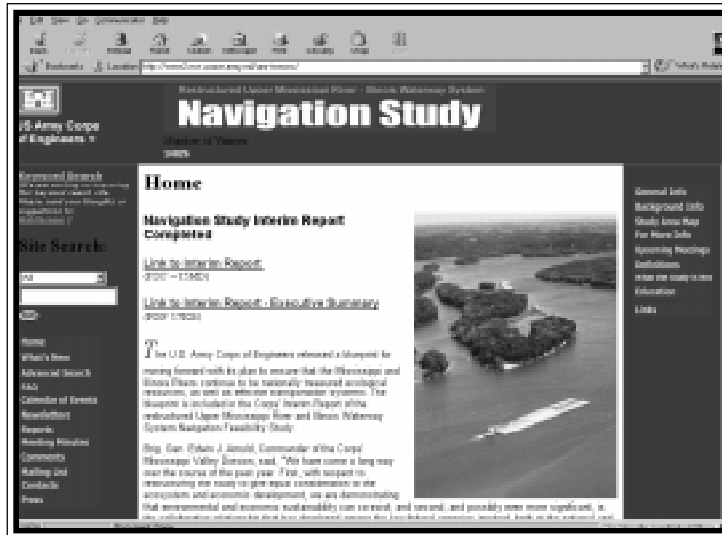
The Interim Report was of particular interest, with 2,999 copies of the 200-plus-page document accessed via the web site since it was posted in August. Minutes from public meetings and the study's coordinating committees also were popular destinations. For example, 344 people downloaded the public meeting slide show and dozens made copies of minutes from Navigation Environmental Coordination Committee and other coordinating committee meetings.

"Downloads have turned out to be a significant feature of our site, the public's tool of choice for getting information," said Kevin Bluhm, leader of the study's public involvement team. "We have 220 reports loaded into the site now, and that gives the public far more information than would have been routinely available before. People can get as much data as they desire, without getting more than they need."

Most visitors to the site entered by the main page, and most through a search engine referral. Some 50 visitors were referred from grainnet.com, a news and information site for the grain, milling, feed and seed industries and another 50 from big-river.com, an online magazine devoted to the Upper Mississippi. While the largest

number of visitors, by far, hailed from North America, some 291 visitors were based in Western Europe, 183 in Asia, and 46 in Australia. Within the United States, the largest number of visitors came from the Washington D.C./Virginia area and the five-state study area.

An average of 88 people visited the site on a typical weekend, with 93 visiting on average on a typical weekday. The most active hour of the day for browsing was between 9 and 10 a.m.



New Reason to Visit Each Month

Regular status reports have been posted monthly since September under the "what's new" section of the study web site. Each month, the study

team is making public the latest data from ongoing field studies, updates from each study team, events or upcoming meetings of note, and links to reports just completed or perhaps even still under development or review. The status reports are a response to requests by study collaborators and the general public that information be provided not just "after the fact," but on an ongoing basis. Stakeholders have said they need to more closely follow the study process if they are to be successful collaborators, said Assistant Project Manager Scott Whitney.

The status reports supplement other outreach efforts, including an increasing number of meetings and conference calls with study partners. The updates help provide a regular "porthole," Whitney said, through which the team can routinely provide some insight into the component specific complexities and successes. They also expose readers to aspects of the study that they may not be familiar with or have not previously considered.

Visit the site at: <http://www2.mvr.usace.army.mil/umr-iwwsns/>. ♦

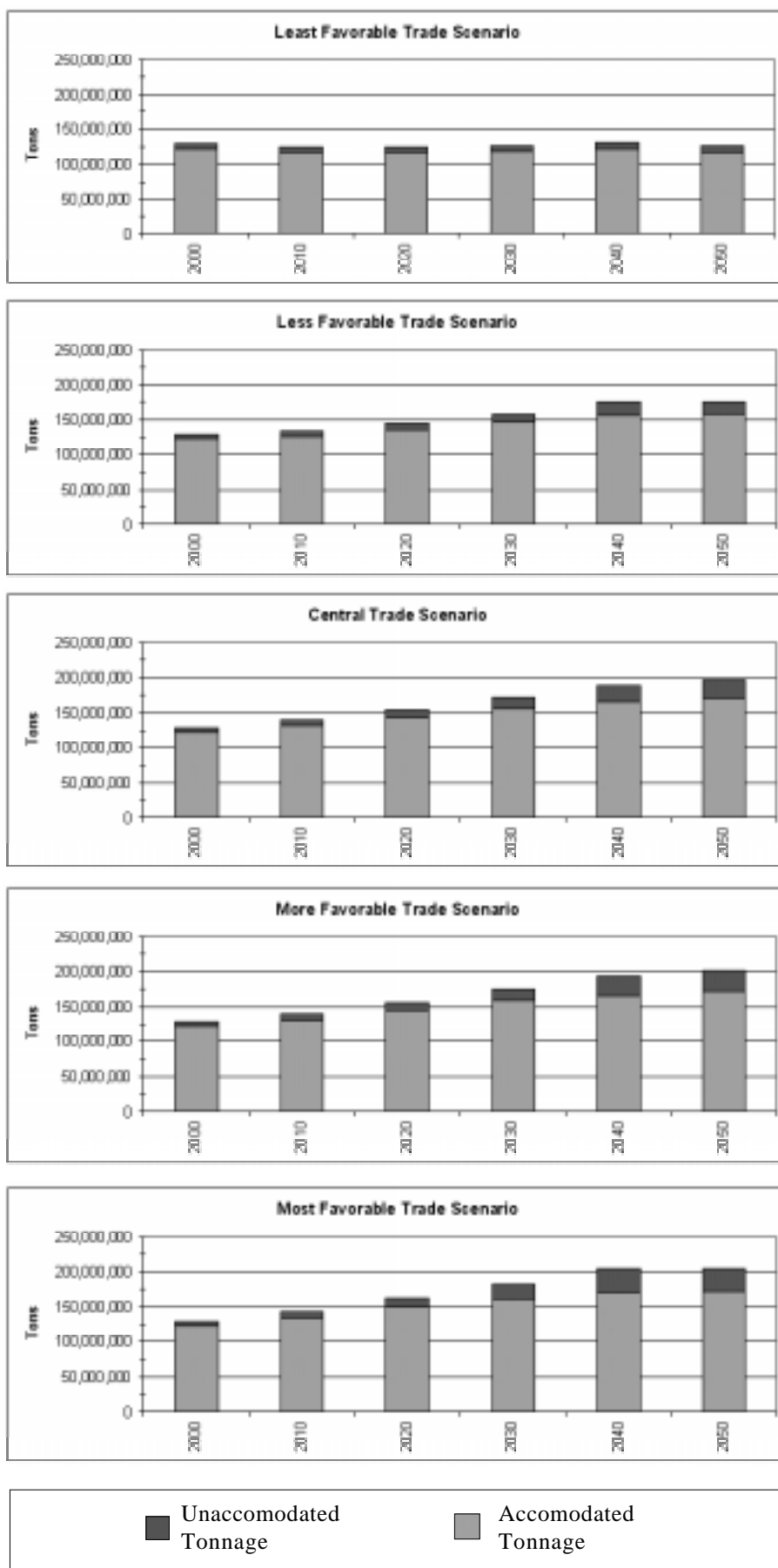
"Without Project" Traffic Scenarios Released

The potential scenarios affecting future demand for waterway transportation of farm and other products have been developed. Along with that, the study team has released the level of traffic that could—and is expected—to use the waterway system under each set of potential conditions.

How much barge traffic (and resulting tonnage) will use the river in any given year depends on a multitude of factors that affect grain production and demand, and the following five scenarios encompass combinations of policies, conditions and events that could impact U.S. agriculture and import markets. The most favorable, for example, assumes the highest overseas demand for U.S.-made farm exports.

Each graph displayed here depicts waterway system (Mississippi River from Minneapolis to Cairo, Illinois, and the Illinois Waterway) tonnage by year for a given scenario. Each scenario represents a possible description of the "without-project" condition, or what is expected to occur in the future in the absence of new federal action providing for significant changes in the current system.

The total height of each bar on the graph represents potential tonnage in a given year. *Accommodated tonnage* represents the portion of potential tonnage that is forecasted to actually use the waterway. *Unaccommodated tonnage* is the difference between potential tonnage and accommodated tonnage. For the least favorable trade scenario, unaccommodated tonnage is more or less constant due to the relatively constant forecast of total system tonnage over time. For the others, unaccommodated tonnage generally increases over time as the growth in potential tonnage is forecasted to exceed the ability of the existing waterway system to economically handle the full amount of the increase.



* Figures represent short tons and reflect a broader geographic scope than is described in the Sparks Scenario Report.

Are Fish Getting out of the Way?

Hydroacoustics allow insight into main channel mystery

New technology is being put to use to do groundbreaking research on the effects of barge traffic on fish in the main channel as well as those trapped with a barge inside a lock. Do fish know enough to get out of the way of a towboat? Are fish inside locks at greater or lesser risk? Are some species more at risk than others? Those questions and others are being answered by field studies scheduled to wrap up this month.

Research teams are analyzing data on a variety of studies being held as follow-ups to earlier study research on main channel fish. Previous research efforts by the U.S. Geological Survey sampled main channel fish to identify species, abundance and size and even followed the sailing line of barges to determine to what extent fish were being injured by the propellers. Subsequent to that study, newer nets were developed that could withstand the pressure directly behind a towboat. Researchers led by Jack Kilgore, a fisheries biologist with the U.S. Army Engineer Research and Development Center in Vicksburg, Mississippi, attached a large trawl net directly to the back of a towboat and followed behind, sampling a

mile or so of river every 10-to-15 minutes. The new method, which allowed researchers to sample nearly all the water passing through the propellers, discovered

less direct fish mortality from tows than was projected in the previous study. Of the some 4,540 fish collected in the first 105 trawl tows, Kilgore found two gizzard shad and one skipjack herring determined to have been injured by the tow's propeller.

Insight into Fish Behavior

If fish are not getting injured by propellers, is it because they know enough to move out of the way? What's really going on underwater when a barge approaches? Researchers have turned to hydroacoustic technology to determine what's actually happening in the channel. They've been using the sonar-style equipment to tell how many fish are there, what their relative sizes are, and in what direction they're heading.

"We're able to look at fish in front of the tow and see what they're doing," said Tom

Keevin, a Corps of Engineers ecologist serving as technical manager of the fish studies. "It's especially exciting to see what happens at night." There were

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significantly more fish in the channel at night than during daytime hours, he says. There also was a seasonal difference, with hardly any fish found in the channel during winter.

When fish do find themselves in the path of a towboat, early evidence suggests that the larger fish can somehow sense a barge is coming, either from the pressure wave at the bow or the noise the propeller makes. Analysis of the early hydroacoustics work showed that in most cases observed, fish moved to the sides of the channel when a towboat approached. Keevin cautions, however, that all results have not been analyzed and have not necessarily been consistent. Related research is looking at what cues fish may be using to tell them to move.

What about fish trapped in a lock?

In response to U.S. Fish and Wildlife Service concerns about fish mortality caused by towboats that pass through the confined space of a lock, the study team initiated research within Lock 25 this past summer. After a towboat passed through the lock, researchers collected dead or injured fish from the surface and sampled approximately half the lock bottom with a trawl. To date, more than 40 towboat passages have been monitored with mixed results. No fish killed by propellers were collected during 11 passages surveyed in June. A few dead fish were collected after most of the tow passages in August and October. Gizzard shad made up the majority of mortalities. Researchers also are conducting a monthly hydroacoustic study of the lock to determine the number of fish present. ♦

Researchers Seek to Improve Fish Passage

An interagency team is looking at ways to improve fish passage through the navigation dams that restrict fish movements on the Upper Mississippi River and Illinois Waterway. The effort recognizes that improving fish passage through the dams is a valuable way to restore the river ecosystem, and it's one that can be accomplished through changes in dam operation and with structural fishways.

Of the native fish species in the river system, at least 34 of them migrate—including rare species like paddlefish and popular sport fish (catfish, walleye, northern pike and bass). The migrating fish can move downriver through locks as well as gated sections of the dam. But upriver passage is dependent on hydraulic conditions through the dam gates and individual fish behavior and swimming abilities.

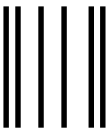
The study is looking at possible operational changes in addition to structural modifications that could improve fish passage, thus improving access to new habitats. That improved access to habitats could potentially benefit fish and mussel populations throughout the river system.



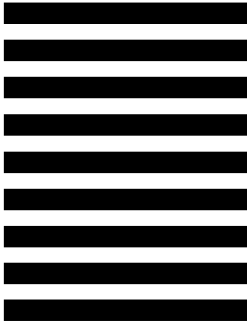
The technical report, expected in June 2003, will include a look at: the importance of habitat connectivity; fish behavior and swimming performance; alternatives for improving fish passage; ways to limit the passage of invasive fish species; site priorities; evaluation of cost and benefits; and implementation recommendations.

Questions or comments should be directed to Dan Wilcox, a Corps of Engineers fisheries biologist with the St. Paul District, at 651-290-5276 or daniel.b.wilcox@usace.army.mil.

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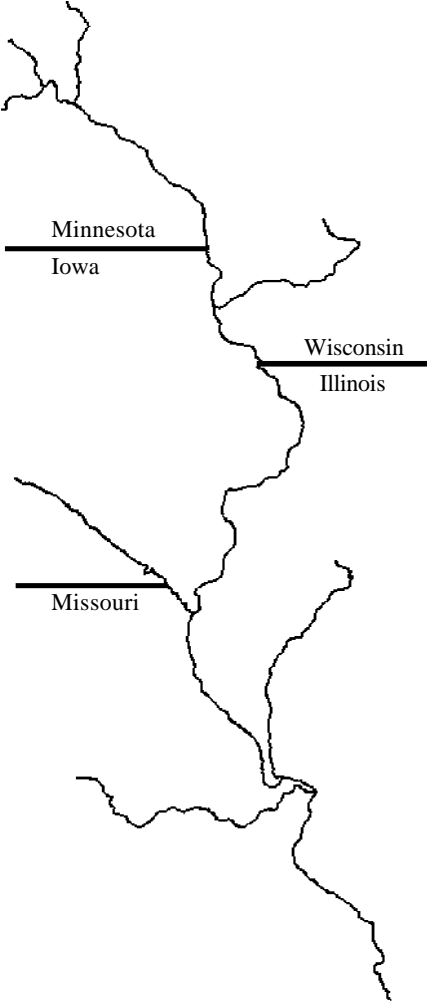
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US Army Corps
of Engineers

March 2003

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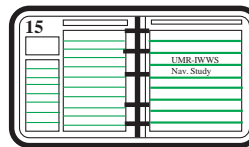
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Sedimentation Research Continues

Research teams are giving a closer look to the backwaters on the Upper Mississippi River System to determine the risk, if any, of measurable sediment being transferred into 13 backwater areas by passing tows.

The Corps' Environmental Research and Development Center has been collecting data over the past year to verify models used previously to identify side channels and backwaters susceptible to this tow-induced sedimentation due to the wash of waves or re-suspension by propellers.

Data collection was performed at the Frenchtown Lake site in Pool 10, Bit Soupbone Island in Pool 13, and at Sugar Creek Island and Treadway Lake Chute in the Illinois River's LaGrange Pool. Instrumentation was placed near head of backwater and side channel inlets to record data on wave heights, sediment movement, velocity and other parameters to get a more definitive look at the effects of a passing barge. ♦



Upcoming Meetings

Governors' Liaison Committee

May 13 2003 1 p.m.-5 p.m.

Sheraton West Port Hotel Lakeside Chalet
191 West Port Plaza
St. Louis, Missouri
314-878-1500

Navigation Environmental Coordination Committee

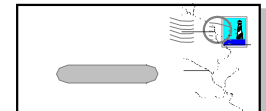
April 22 2003

Davenport, Iowa

Check 1-800-872-8822 for final meeting times and locations
or visit the calendar of events on our website:
<http://www2.mvr.usace.army.mil/umr-iwwsns/>.

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If we do not receive a response, we will continue sending you a newsletter at the current address on our database. ♦

In Brief

FY 2004 Budget News

• The President's fiscal 2004 budget, released February 3, contained exciting news for the Upper Mississippi River System. The President has recommended that the Environmental Management Program, a project to rehabilitate habitat, backwaters and side channels as well as collect and analyze trend data, be funded to its authorized amount of \$33.3 million for 2004—an increase of more than \$18 million over fiscal year 2003. "This is an example of what can happen when regional interests collaborate for a common purpose," Regional Project Manager Denny Lundberg said, adding that study states and non-governmental organizations were instrumental in helping secure this critical funding.

Traffic Scheduling Benefits Studied

• The study team has contracted with the Volpe National Transportation Systems Center, a fee-for-service organization within the U.S. Department of Transportation, to assess the potential benefits of tow-boat scheduling and traffic management on the Upper Mississippi River System.

Questions?

○ For general study information, call Denny Lundberg, regional project manager, at 309/794-5632, write ATTN: CEMVR-PM, or visit our home page at:

<http://www2.mvr.usace.army.mil/umr-iwwsns/>

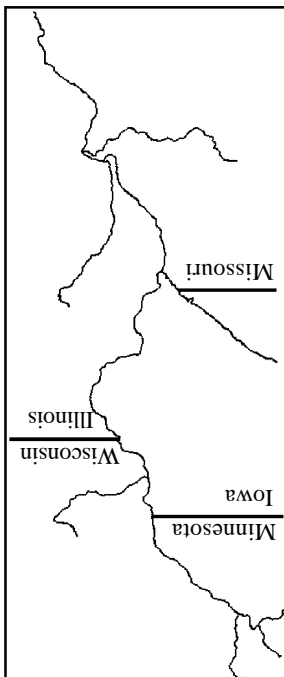
○ For information on Public Involvement meetings, call the toll-free telephone number, 800/USA(872)8822. Meeting announcements will be in the Public Involvement menu. Or call Kevin Bluhm, public involvement coordinator, at 651/290-5247, or write to the address below, ATTN: CEMVR-PM-A.

○ To be added to the mailing list for future newsletters, study updates, and meeting announcements, write, to the address below, ATTN: CEMVR-PM-A, or call the toll-free telephone number and leave your information in the Public Involvement menu.

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